

Fiscal federalism and incentives in a Russian region

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Transfers from a higher-level government budget may affect the incentives of lower-level governments to foster their tax base. If transfers offset completely changes in owned budgetary revenues, fiscal incentives are destroyed. Using the data from a Russian region, we cannot reject the hypothesis that transfers offset completely changes in municipal revenues, although the transfers are adjusted with a lag. The estimates suggest that this transfers policy is due in part to short time horizons for regional governments and commitment problems. Budgetary constraints of Russia's regions could have also played a role. Such initial conditions distinguish Russia from Poland and China. *Journal of Comparative Economics* **31** (1) (2003) 20–33. Indiana University, Bloomington, IN 47405, USA; Center for Fiscal Policy, 11-a Novinsky Blvd, 121099 Moscow, Russia.

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1. Introduction

Several recent articles focus on the incentives of different levels of government in a federal state undergoing transition from socialism to a market economy, e.g., Jin et al. (1999), Litwack (2002), Qian and Roland (1998), Treisman (1996), and Zhuravskaya (2000). While most of this literature concerns the relationship between the federal center and the regions, the interaction between a region and its constituent municipalities is

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also attracting increasing attention. Zhuravskaya (2000) presents one of the first rigorous empirical analyses of incentives of local authorities in Russia. Using a unique set of data on the budgets of 35 large Russian cities in 29 regions for the 1992 to 1997 period, she investigates the degree of financial independence of cities from regional governments and the resulting incentives for these cities to provide public goods. Importantly, Zhuravskaya cannot reject the null hypothesis that, on average, the regional governments tend to offset completely the changes in municipal revenues with changes in subsidies to municipalities. This result implies that local governments lack fiscal incentives to develop their revenue bases. However, Zhuravskaya presents no explanation for the apparently suboptimal behavior of regional governments that would support the hypothesis. Furthermore, her data suffer from certain shortcomings.

Based in part on the findings of the market-preserving federalism literature and on Zhuravskaya's results, the apparent lack of fiscal independence of Russia's municipalities has become one of the commonly cited reasons for poor performance of the government and the economy in Russia relative to Poland and China.¹ Why do Russia's regions fail to provide a substantial degree of fiscal independence to their municipalities? Assuming rationality of regional authorities, there are two possible answers. Either Zhuravskaya's results are incorrect or there is something about Russia's circumstances that explains the different, and ostensibly counterproductive, behavior of its regions.

In this paper, we pursue the following two goals. First, we use our own data set from one of Russia's regions to re-examine Zhuravskaya's results concerning the financial relationship between a region and its municipalities. While improving on Zhuravskaya's econometric procedure, we obtain results that modify but do not reject her basic findings. Second, we suggest why Russia's conditions early in the transition might have led its regions to deprive their constituent municipalities of significant fiscal independence.

Our argument can be summarized in the following way. In the standard principal–agent relationship with commitment in which the agent's efforts influence the payoff, the principal always wants to provide the agent with incentives to exert effort. However, if the region cannot commit to an efficient incentive scheme, a ratchet effect may arise and lead to a highly suboptimal equilibrium. The regions' commitment problems in Russia are likely to be more severe than in Poland or China because of the high degree of political instability and overall uncertainty in the country during the early stages of transition that resulted in short-sighted horizons for regional governments. In addition, Russia's regions possibly perceived the efforts of municipal authorities as irrelevant to the revenue collections due to a negligible size of the natural municipal tax base, i.e., the small private sector in Russia at the start of the transition. However, our estimates do not lend much support to the latter explanation.

The next section discusses the interaction between a region and its municipalities in a principal–agent framework. Section 3 describes the technique used by Zhuravskaya (2000), points out some of the problems with her approach, and presents our own estimates.

¹ For a brief overview of market-preserving federalism theory, see Qian et al. (1997). The papers that at least partly blame the dysfunctional incentives of local authorities for the poor performance of the Russian economy include Jin et al. (1999), Freinkman et al. (1999), Shleifer (1997).

Section 4 summarizes our results and presents some explanations of the behavior of regional governments in Russia.

2. Budgetary interaction between a region and its municipalities in Russia

2.1. A summary of Russia's regional revenue sharing system

The sources of municipal budget revenues in Russia can be classified as own revenues and revenues shared with municipalities through the discretion of regional governments.² Own revenues belong to the municipality and cannot be appropriated easily by regional governments. Own revenues include local taxes and fees, income from the use of municipal property, and revenues from privatization of municipal property. In addition, own revenues may include shares of federal and regional taxes assigned to the municipalities on a more or less permanent basis by either federal or regional laws. For example, federal law requires the regions to assign to each municipality at least 50% of the enterprise assets tax collected on its territory and all of the personal income tax (PIT) from entrepreneurs who operate without registering as juridical persons.

In the mid-1990s, regions were also supposed to assign some other tax revenues to their municipalities on a permanent basis, although the federal law required the regions to assign certain shares of some taxes only on average.³ Different municipalities may be assigned different shares of these taxes and these assignments can change as long as the average requirement is satisfied. Hence, for many municipalities, it is difficult to ascertain the degree of the region's discretion with respect to the assignment of the above taxes. First, one needs to know the regional legislation on tax assignments and how difficult it is for the regional government to change it. Second, even if the regional government is sufficiently powerful to change tax assignment laws, it may have limited discretion about changing tax assignments of large municipalities. For example, a federal law requires the regions to assign on average at least 50% of the PIT to their municipalities. If the regional capital collects more than 50% of the regional PIT, the region cannot reduce its PIT share to zero. All other municipal budget revenues, including their shares of federal taxes that are retained by the regions, regional taxes, as well as targeted and general subsidies paid to municipalities by the regions, belong to the category of discretionary revenues (*reguliruiushchie dokhody*).

As was mentioned above, the federal law provides only for the minimum limits on assignments of certain tax revenues to municipalities. Many regions have either adopted legislation or established procedures that go far beyond these requirements in terms of making municipal revenues less dependent on the discretionary transfers from the regional gov-

² Russia's municipalities are divided into two categories. Tier 1 includes districts (*raiony*) and cities under regional jurisdictions. Tier 2 consists of cities under district jurisdiction, villages, and townships. As of late 1996, there were about 2500 Tier 1 municipalities. This paper focuses on the relationship between regions and their Tier 1 municipalities.

³ Article 7 of the Federal Law "On the Financial Foundations of Local Self-Government in the Russian Federation," FZ #126, *Sobranie zakonodatel'stva Rossiiskoi Federatsii* (Collection of the Laws of the Russian Federation), no. 39, pp. 7656–7666, September 1997.

ernment. Elsewhere (Alexeev and Kurlyandskaya, 1998), we examine the interbudgetary relations in five large *oblast*, namely, Nizhny Novgorod, Novgorod, Novosibirsk, Perm, and Rostov, over a period of several years in the mid-1990s. Our analysis suggests that, for a great majority of municipalities in these regions, many of the tax assignments that have been traditionally viewed as discretionary have, in fact, been assigned to municipal budgets on a stable basis. This statement holds for virtually all municipalities that receive transfers from the regions in addition to the assigned to them tax revenues collected on their territories (hereafter, poor municipalities), as well as for some of the richer municipalities.

Even though poor municipalities receive almost the entire regional shares of tax revenues collected on their territory, they cannot generally cover their expenditure responsibilities. For this reason, they receive significant financial assistance from the regional budget in the form of targeted and non-targeted subsidies. For example, in Rostov *oblast*, the share of explicit subsidies in total expenditures of the Tier 1 municipalities was over 29% in 1997. For many poor municipalities, subsidies account for well over half of their expenditures. In other words, the degree of financial independence of municipalities depends mostly on the procedures for allocating these transfers.

To summarize, the degree of the region's discretion with respect to a significant portion of municipal revenues is difficult to determine. However, for the relatively poor municipalities, almost all of regional tax revenue collected on their territory can be viewed as assigned revenue, at least on the margin, i.e., as long as they remain in the category of poor municipalities. In this sense, the determination of fiscal relationships between poor municipalities and regional centers is relatively straightforward.

2.2. The region's behavior and municipality's incentives

All taxes in Russia are collected by the federal Ministry. Nonetheless, municipal authorities may be able to influence the size of their revenue base, particularly with respect to small business. Their incentives to foster their own tax base depend on the willingness of the region to offset the changes in municipal own revenues with changes in transfers. If the region routinely increases (reduces) transfers to the municipality one-for-one in response to the decrease (increase) in municipal own revenues, the municipal authorities would have no incentives to enhance their own tax base. In order to estimate the strength of the municipal incentives to develop its own revenue base, Zhuravskaya (2000) regresses the change in transfers from regional budget to municipalities between two years on the change in own revenues of these municipalities for the same two years, controlling for population size, city effects, and the year. The equation, with all control variables omitted is:

$$(T_{A,t+1} - T_{A,t}) = k \cdot (R_{A,t+1} - R_{A,t}) + \varepsilon, \quad (1)$$

where $R_{A,t}$ and $T_{A,t}$ denote the actual own revenues and transfers from the region to the municipality in year t , and ε is a random error. If the null hypothesis that k equals minus one holds, the municipalities would have no incentive to grow their own tax bases.

Based on data from 1992 to 1997 for 35 large cities from various regions, Zhuravskaya (2000) cannot reject the above null hypothesis. In fact, her point estimates for k are remarkably close to minus one. This result is rather surprising if we consider the relationship between the region and its municipality in a standard principal-agent framework, in which

the principal cannot observe directly the risk-averse agent's effort but can observe a generally uncertain outcome of the agent's activities and can commit to a certain reward scheme. In our context, the region cannot observe directly the municipality's actions with respect to enhancing its revenue base, but can observe actual revenue collections and commit to the amounts of transfers. It is rather straightforward to demonstrate that, if the principal is able to commit and as long as greater effort by the agent increases the likelihood of better outcome, the optimal contract would not completely deprive the agent of the incentive to increase effort (Shavell, 1979, Proposition 2).

Of course, the relationship between a region and its municipality is more complicated than this standard principal–agent framework. Among other things, the regional authorities may care not only about their own share of taxes collected in the municipality, but also about the size of municipal expenditures and, therefore, municipal revenues.⁴ Furthermore, the regions interact with a number of different municipalities. Therefore, regional authorities may have a goal to equalize municipal expenditures and face constraints with respect to the amount of transfers they can make to compensate municipalities for revenue shortfalls. However, these differences do not invalidate the general conclusion that regions would find it in their interest to provide some incentive for municipalities to increase the tax base.⁵ Moreover, the one-on-one offsetting of changes in municipal revenues with transfers would make it more attractive for the municipalities to hide revenues from regional authorities by, for example, asking the local taxpayers to contribute services to the municipality in exchange for protection from the tax inspectors.⁶

In light of the above discussion, if Zhuravskaya's results are correct, they could occur either because municipal revenues are not significantly influenced by the municipal authorities' effort or because the regions are not able to commit to an efficient course of action or reward based on the observed amount of municipal revenue. In the next section, we re-examine Zhuravskaya's results using a data set from a Russian region. Later, we will use our estimates to try to determine whether the irrelevance of municipal efforts or the regions' commitment problem is more likely to affect the behavior of regional authorities. In addition, we compare the Russian circumstances with those in Poland and China in order to explain the apparent differences in the behavior of the regional authorities in these countries.

⁴ The optimal taxation literature might provide an appropriate framework for the analysis of region–municipality interaction. This is only partly correct because, in optimal taxation models, there are no participation constraints. In addition, the state typically is assumed to maximize the aggregate welfare of the taxpayers, while in our case the region is concerned only with the amount of municipal expenditures. The municipal authorities' overall welfare is not important as long as its utility does not drop below a certain level, i.e., the participation constraint is satisfied.

⁵ Technically, the region's interest in the municipal expenditures appears to produce the same outcome as the increase in the degree of agent's risk-aversion. As long as the region does not place greater weight on the size of municipal expenditures than on its own share of tax revenues, the standard conclusion holds. It would also hold if the region's equalization goals did not override efficiency considerations completely.

⁶ Treisman (2000) examines how regional governments protect enterprises against federal authorities. Presumably, municipalities would find it more difficult, but not impossible, to protect their taxpayers against the regional center.

3. Estimates based on regional budget data

The main purpose of this section is to estimate the relationship between municipal revenues and transfers from the regional budget, using municipal-level budget data for Russia's Rostov region (*oblast*) from 1996 to 1998. First, we run regressions based on Eq. (1) and then propose a different estimating procedure to alleviate the shortcomings of the earlier work.

Our budget data for Rostov *oblast* cover its 55 Tier 1 municipalities. Of these, 46 municipalities, all of which received direct subsidies from the region, retained the entire regional shares of all major taxes except excises (i.e., VAT, profit tax, PIT, and enterprise assets tax), throughout the period. This suggests that these 46 municipalities could be reasonably sure that, on the margin, the changes in collections of these taxes would not lead to changes in the sharing rates. For these municipalities, only the direct subsidies from the regional budget were used to offset changes in revenue collections. Therefore, the task of separating own revenues from transfers becomes relatively easy. In the regressions based on these 46 municipalities, we treat all tax and non-tax revenues as own revenues, and transfers will consist only of direct subsidies from the regional budget. The only issue is whether the deficits incurred by the municipal budgets should be counted as part of the transfers. We assume that municipal deficits most likely represent a short-term mismatch between expenditures and revenues, and, therefore, we do not include deficits in the transfers.

Table 1 presents regressions similar to those found in Zhuravskaya (2000). The first part of the table shows the estimates based on per capita values of the revenue and transfer variables, while the second part of the table uses total amounts.⁷ Specifically, Table 1

Table 1
Results of regressions based on Eqs. (2) and (3)

Independent variables	Dependent variables					
	$(T_{A,t+1} - T_{A,t})/Pop_t$			$T_{A,t+1} - T_{A,t}$		
	OLS	Fixed effects	Random effects	OLS	Fixed effects	Random effects
Constant	−8.24 (31.8)	n/a		7867 (2914)	n/a	374798 (358016)
$\frac{R_{A,t+1} - R_{A,t}}{Pop_t}$	−0.27** (0.15)	−0.21** (0.24)	−0.28** (0.15)	n/a	n/a	n/a
$R_{A,t+1} - R_{A,t}$	n/a	n/a	n/a	−0.34** (0.14)	0.32** (0.27)	−0.23** (0.19)
Pop_t	−1.22 (0.39)	−173 (101)	−1.29 (0.30)	−221 (43)	−38162 (11685)	7286 (5043)
Year	−263 (43)	−289 (47)	−269 (38)	1656 (3190)	−2353 (3518)	851 (3344)
Adjusted R^2	0.35	0.37		0.43	0.40	

Notes. The Hausman test favors fixed effects models over random effects models. Standard errors are in parentheses.

** The coefficient is greater than −1 at a 1% significance level.

⁷ We prefer the per capita regressions because otherwise the changes in subsidies and own revenues of larger municipalities may have a very strong effect on the estimates of the regression coefficients.

contains the results of the following two types of regressions:

$$\frac{T_{A,t+1} - T_{A,t}}{Pop_t} = a + \frac{k \cdot (R_{A,t+1} - R_{A,t})}{Pop_t} + b_2 \cdot Pop_t + b_3 \cdot Y96 + \varepsilon \quad \text{and} \quad (2)$$

$$T_{A,t+1} - T_{A,t} = a + k \cdot (R_{A,t+1} - R_{A,t}) + b_2 \cdot Pop_t + b_3 \cdot Y96 + \varepsilon, \quad (3)$$

where Pop_t denotes municipal population in year t , and $Y96$ is a dummy variable for 1996. We ran the regressions using OLS, fixed effects, and random effects techniques. The data for transfers in year $t + 1$ were adjusted by the price index for Rostov *oblast*. However, different ways of adjusting the data for different years are possible. For example, the data could be adjusted by the ratio of the Rostov *oblast* sum of municipal total revenues for the relevant years. In this case, the 1997 (1998) data would be multiplied by the ratio of the sum of municipal revenues in 1996 to that of 1997 (1998). Such adjustment may be even more reasonable than simply using the price index because regional budgets, and possibilities for transfers in particular, are affected by several factors in addition to the change in the general price level. Nonetheless, we decided to use the price index adjustment as our benchmark case because it is more conventional and comparable to the estimates performed by others. The results of regressions with the data adjusted by the total municipal revenues were qualitatively similar to our benchmark results.

Unlike in Zhuravskaya's work, none of the regression specifications yield estimates of coefficients k close to minus one. In fact, most of these coefficients are only slightly statistically different from zero and none of them are statistically different from -0.16 , the value that Jin et al. (1999) report for the province level from 1982 to 1992 in China. However, this does not necessarily imply that Zhuravskaya's conclusions were wrong. First, our estimates are not directly comparable to hers, mainly because her data relate to large cities in many different regions from 1992 to 1997, while our data are from smaller municipalities located in the same region and cover the 1996 to 1998 period. The time period may be important because of the adoption of the major federal law on municipal finances in 1997.⁸ Furthermore, the regions' fiscal policies with respect to their capitals were probably different from their policies towards smaller municipalities, and Rostov *oblast* may not be representative of other Russia's regions. On the other hand, the advantage of our estimates is that they reflect a certain policy rather than an average of disparate policies across many different regions. In addition, our data allow for a more reliable separation of own revenues from transfers.

More importantly, Eqs. (2) and (3) may not be entirely adequate for evaluating the fiscal incentives of municipalities. There are at least two potential problems with Zhuravskaya's estimating procedure. First, her procedure may reject the hypothesis that k equals minus one despite the absence of significant municipal fiscal independence. This can occur easily if the adjustment of regional transfers to the municipality takes place at least in part with a lag through the adjustment of future targets according to the ratchet principle familiarized in the work of Weitzman (1980), Litwack (1993), and Roland and Sekkat (2000). For example, suppose that actual revenues of a municipality remain stable through the year t

⁸ The law "On the Financial Foundations of Local Self-Government in the Russian Federation" was enacted in September 1997.

but rise by 10 in the year $t + 1$. If the change in transfers offsets the change in own revenues one-on-one but with a one-year lag, the actual transfers would remain stable until the year $t + 2$, and estimates of coefficient k based on the data through the year $t + 1$ would be zero. Meanwhile, the lagged one-on-one adjustments of transfers limit fiscal independence of municipalities significantly.

Conversely, the fact that estimating Eqs. (2) or (3) yields k equal to minus one need not imply a lack of fiscal independence. For example, if the municipality's own revenues increase because the region has raised the rate of some tax that accrues to the municipality, it would be natural for the region to reduce transfers by the appropriate amount. More importantly, some significant sources of municipal revenue, such as the enterprise assets tax, may have little to do with the efforts of municipal authorities. For example, if a region uses profit tax exemptions to attract a large investment project to a given municipality, it would increase the municipal tax base. In this case, a corresponding reduction in regional transfers to the municipality would not undermine its financial independence. Both of the above examples would yield estimates of the coefficient k equal to minus one even though the municipalities may have a significant degree of fiscal independence.

We propose a different estimation procedure based on the comparison of actual and planned revenues of municipalities that alleviates significantly, if not completely eliminates, the above problems. Let subscript P denote the amounts of either own revenues or transfers that the region plans for the municipality. Fiscal incentives of municipalities can be evaluated from the following two types of regressions with the control variables omitted:

$$T_{A,t} - T_{P,t} = k \cdot (R_{A,t} - R_{P,t}) + \varepsilon, \quad (4)$$

$$T_{P,t+1} - T_{P,t} = k \cdot (R_{A,t} - R_{P,t}) + \varepsilon. \quad (5)$$

Assuming that $k \neq 0$, Eq. (4) implies that the region adjusts its transfers during the same year in which actual own revenues deviate from the target. Relationship (5) reflects a one-year lag. Note that regressions based on (4) and (5) are not affected systematically by any changes in municipal revenues and regional transfers exogenous to the municipality as long as these changes are taken into account in devising the plans for own revenues and transfers.

With different notation and without a constant term, Eq. (5) is identical to the expression of the ratchet principle in Weitzman (1980). As Weitzman (1980) demonstrates, the agent's incentives to raise output under a ratchet principle are inversely proportional to $(1 - k/r)$, where r is the discount rate. Even if $k = -1$, the agent still has some, albeit weak, incentives to exert effort, particularly if r is relatively high, as it has been in Russia in the initial period after 1992 reforms.

Ratcheting future targets, as in Eq. (5), may result from the inability of the principal to commit to an efficient reward scheme in the presence of unobservable effort by heterogeneous agents. In Eq. (4), $k < 0$ may be a consequence of an extreme type of commitment problem, in which the principal is unable to commit even to the present period reward. However, it may also represent rational behavior by the region if the region assumes that municipal efforts have no effect on municipal revenues. Unlike in Poland, such a perception may be quite reasonable in Russia, where the legal small business sector

was negligible in the early period of transition.⁹ A comparison of the estimates from Eqs. (4) and (5) helps us to determine the nature of the region's commitment problems and its perception of the importance of municipal efforts. Note that Zhuravskaya's procedure is more closely related to Eq. (4) than to (5).¹⁰

As required by the proposed estimation procedure, our data for Rostov *oblast* contain both the planned targets and actual revenues and transfers for its 55 Tier 1 municipalities for the 1996 to 1998 period.¹¹ These data allow us to estimate the following four types of regressions based on (4) and (5):

$$\frac{T_{A,t} - T_{P,t}}{Pop_t} = a + \frac{k \cdot (R_{A,t} - R_{P,t})}{Pop_t} + b_2 \cdot Pop_t + b_3 \cdot Y96 + b_4 \cdot Y97 + \varepsilon, \quad (6)$$

$$\frac{T_{P,t+1} - T_{P,t}}{Pop_t} = a + \frac{k \cdot (R_{A,t} - R_{P,t})}{Pop_t} + b_2 \cdot Pop_t + b_3 \cdot Y96 + \varepsilon, \quad (7)$$

$$T_{A,t} - T_{P,t} = a + k \cdot (R_{A,t} - R_{P,t}) + b_2 \cdot Pop_t + b_3 \cdot Y96 + b_4 \cdot Y97 + e, \quad (8)$$

$$T_{P,t+1} - T_{P,t} = a + k \cdot (R_{A,t} - R_{P,t}) + b_2 \cdot Pop_t + b_3 \cdot Y96 + e, \quad (9)$$

where Pop_t denotes municipal population in the year t , and $Y96$ and $Y97$ denote the respective year dummies. We ran the regressions using OLS, fixed effects, and random effects techniques. As before, we adjust the data for the year $t + 1$ by the Rostov *oblast* price index.

Table 2 shows the estimates of the coefficients for (6) and (7) based on per capita data, while Table 3 presents the similar estimates for Eqs. (8) and (9).

Our data do not allow for the random effects specification of the per capita models because the estimates of the variance of the error term are negative. This is not an uncommon problem and generally it is not considered to be an indication of a misspecification of the model (Greene, 2000; Baltagi, 1995). In order to eliminate this problem, we ran the random effects regressions for the per capita data either without the year dummies, as in Tables 2 and 3, or without the constant as in Table 1. The excluded variables are not statistically significant in the corresponding fixed effects specifications.

⁹ In the fall of 1991, only about 2.5% of Russia's industrial output was produced at non-state-owned enterprises (Ivanov and Kolbasova, 1992). Employment in Russia's cooperatives, that were essentially small private enterprises, comprised about 3% of all non-agricultural sector employment in 1991 (Rossiia-1993, 1993). Even during the first year of reforms in 1992, legal small businesses employed slightly more than 10% of non-agricultural labor force. Moreover, a quarter of this employment was concentrated in Moscow and St. Petersburg (OECD, 1997). Outside of these two cities, the legal small business sector was truly miniscule. In Poland, the private sector, comprised presumably mostly of small enterprises, accounted for 29% of industrial employment and 16% of industrial output in 1989 (Ernst et al., 1996, Table 4.2). For the entire economy, the respective percentages were 47% and 30%.

¹⁰ If the planned targets in (4) are the same for t and $t + 1$ periods, the true value of the coefficient k in (1) would be the same as in (4). Under these assumptions, Eq. (1) could be obtained from (4) by subtracting the relationships for the year t from those for the year $t + 1$.

¹¹ We are aware that budget plans of municipalities may change considerably in the course of a year (see, for example, Kurlyandskaya et al. (2002), as well as information obtained by Kurlyandskaya from personal interviews of municipal officials in Leningrad *oblast*). However, our data on planned revenues and transfers are from the original annual budget plans.

Table 2
Regression results for Eqs. (6) and (7)

Independent variables	Dependent variables					
	Actual minus planned transfers $(T_{A,t} - T_{P,t})/Pop_t$			Change in planned transfers $(T_{P,t+1} - T_{P,t})/Pop_t$		
	OLS	Fixed effects	Random effects	OLS	Fixed effects	Random effects
Constant	–169 (35)	n/a	–140.7 (26.8)	–83.8 (20.6)	n/a	–83.8 (18.6)
$(R_{A,t} - R_{P,t})/Pop_t$	0.22** (0.23)	–0.39** (0.24)	0.19** (0.19)	–0.84 (0.15)	–0.43** (0.19)	–0.84 (0.14)
Pop_t	2.09 (0.36)	167 (43)	2.07 (0.39)	1.29 (0.26)	235 (49)	1.29 (0.24)
Year 96	51.9 (42.0)	11.9 (38.7)	–	–232 (22)	175 (23)	–232 (20.3)
Year 97	28.4 (39.1)	–2.65 (35.3)	–	n/a	n/a	n/a
Adjusted R^2	0.19	0.37	–	0.59	0.67	–

Notes. The Hausman test favors fixed effects for the first model and random effects for the second. Standard errors are in parentheses.

** The coefficient is greater than (–1) at 1% significance level.

Table 3
Regression results for Eqs. (8) and (9)

Independent variables	Dependent variables					
	Actual minus planned transfers, $T_{A,t} - T_{P,t}$			Change in planned transfers, $T_{P,t+1} - T_{P,t}$		
	OLS	Fixed effects	Random effects	OLS	Fixed effects	Random effects
Constant	–15754 (3667)	n/a	–887215 (282933)	–6489 (1992)	n/a	–6533 (1799)
$R_{A,t} - R_{P,t}$	–0.13** (0.23)	–0.59 (0.24)	–0.28** (0.23)	–0.94 (0.10)	–0.56** (0.12)	–0.94 (0.08)
Pop_t	271 (39)	33009 (5008)	17111 (3493)	158 (28)	28129 (5177)	159 (26)
Year 96	11236 (4272)	4449 (4082)	–	113 (2083)	4146 (1902)	138 (1756)
Year 97	564 (4236)	–4299 (3983)	–	n/a	n/a	n/a
Adjusted R^2	0.28	0.39	–	0.50	0.65	–

Notes. The Hausman test favors fixed effects models over random effects models. Standard errors are in parentheses.

** The coefficient is greater than (–1) at 1% significance level.

We derive the following conclusions from the results presented in Tables 2 and 3. For all but one specification of the model for the same year transfers, we can reject strongly the hypothesis that the changes in transfers completely offset fluctuations in municipal revenues. Even in the fixed effects specification of the same year transfer adjustment model, the point estimate is considerably greater than minus one. Moreover, none of the specifications of this model based on per capita data, which we think is more appropriate, yields k statistically different from 0. However, in the OLS and random effects

specifications of the ratchet model, the coefficients of the effect of the difference between planned and actual municipal revenues are close to minus one. Therefore, to the extent that the changes in subsidies from the region offset changes in municipal revenues, this offsetting appears to take place partly—or even mostly—through the adjustment of next year targets for subsidies rather than in the year when revenues are collected.

In light of our earlier discussion of Eqs. (4) and (5), these results suggest that the Rostov regional government probably did not perceive the efforts of municipal authorities as completely irrelevant to municipal revenues. Furthermore, the government's commitment problem related mostly to future targets rather than to current ones.

Finally, we ran regressions based on Eqs. (6) through (9) for all municipalities of the Rostov *oblast*, including the relatively rich ones. The results of these regressions differ significantly from the ones reported above. All coefficients k in the per capita regressions based on (6) and (7) are positive, sometimes strongly so, for all three types of specifications. Regressions based on (8) and (9) yield coefficients on changes in municipal revenues that are not significantly different from minus one for all three types of specifications. However, we tend to discount these results, because we think that regional policy with respect to the largest municipalities is probably quite different from regional policy toward smaller ones. Furthermore, we used different approaches to distinguish between transfers and own revenues for the poor municipalities and for all municipalities. However, it is instructive to see how the addition of a few qualitatively different municipalities to the sample can change the regression outcomes. Presumably this fact speaks in favor of our basic approach of using relatively homogeneous municipalities instead of those from different regions.

4. Concluding observations

In the context of fiscal interaction between the regional center and the municipal government in a principal–agent framework, we argue that, if the region can commit to a reward scheme and if the efforts of municipal authorities affect local revenue collections, the center would not want to offset completely the changes in owned municipal revenues with the opposite changes in transfers to the municipality. Following Zhuravskaya (2000), we conduct statistical tests of the strength of municipal fiscal incentives using municipal budget data for the Rostov *oblast*. Our data allow for a more precise formulation of these tests. Similar to Zhuravskaya, we cannot reject the hypothesis that the regional center offset changes in municipal revenues with changes in its subsidies. However, we show that this offsetting is likely to take place through the adjustment of next year transfers, rather than through the current year transfers. Our results are not directly comparable to those of Zhuravskaya because our data cover only poorer municipalities concentrated in one region but they suggest that at least this region provided some incentives to the poor municipalities because of the lag in the adjustment of transfers.

The issue of the differences between the center's approach to richer and poorer municipalities is a potentially fruitful direction of future research. We tried to establish these differences by including dummy variables for the rich municipalities in interaction with the changes in own revenues in our regressions. The coefficients of the terms with dummy variables are not significantly different from zero. This is probably because our

current data set contains too few observations for rich municipalities. As more data become available, we may be able to increase the power of these tests.

Given our qualified support of Zhuravskaya's results, we need to answer the issue of why the behavior of regional governments in Russia is apparently different from the behavior of their counterparts in Poland and China.¹² We mentioned one difference between Russia and Poland as the size of the legal small business sector in the initial stage of transition. However, our empirical estimates do not suggest that this difference is crucial with respect to the region's behavior. Also, the small business sector in China was initially probably even smaller than that in Russia. Therefore, the main difference between the regions' behavior in Russia on the one hand, and in Poland and China on the other, has to do most likely with the nature of commitment problems.

The government's commitment problem has been more severe in Russia than in Poland presumably due to the relative weakness of the rule of law in Russia. The comparison with China, where the purely legal restraints on government have been at least as weak as in Russia, is less straightforward. However, the strength of the rule of law in this context matters significantly only if the regions have a short planning horizons. When the principal–agent relationship is perceived to be long-term, there is a much greater possibility of achieving a good equilibrium in which the agent exerts high effort and the principal commits credibly to not raising the agent's future targets.

The length of the planning horizon of the government authorities is determined mainly by the degree of institutional stability of the country's political system and the overall degree of uncertainty in the country. In both respects, China appears to have had a significant advantage over Russia in the early stages of transition, implying that the Chinese authorities at all levels must have had longer planning horizons than the corresponding authorities in Russia. This, in turn, would make upper-level governments in China more interested in providing a significant measure of fiscal independence to the lower-level authorities. Moreover, the longer-term perspective would also improve the incentives of entrepreneurs to expand existing businesses and start new ones after controlling for investment climate. In addition, from the beginning of transition, the Chinese regions and municipalities might have expected significant rewards for business-friendly policies due to the potential investment from Chinese living overseas.

Even if the overall possibility of regional governments to commit were not very different in the three countries, the precarious fiscal situation in many Russian regions could have affected negatively the outcomes engendered by the ratchet principle. In the absence of commitment by the principal and under asymmetric information about the agents' productivity, two alternative equilibria are possible (Roland and Sekkat, 2000). In a separating equilibrium, the more productive agents exert high effort and receive immediate large rents that disappear in later periods as the targets are ratcheted upwards. However, the payment of initial rents to the highly productive agents requires substantial up-front expenditures on rents by the region. If the region is significantly fiscally constrained, the

¹² The latter question has to be qualified by the fact that we are not aware of any careful empirical study of fiscal incentives in the interaction of regional governments and municipal authorities in either Poland or China. The arguments in Shleifer (1997) with respect to Poland and Jin et al. (1999) with respect to China are somewhat informal or do not relate necessarily to the interaction at the same government levels.

outcome is a pooling equilibrium, in which the principal accepts low effort from the more productive agents. Once obtained, the pooling equilibrium is likely to be stable. The one-on-one offsetting of changes in municipal revenues by transfers weakens the municipalities' incentives to develop their own tax base and thereby justifies the equivalent offsetting in the future. This logic of a vicious circle is consistent with the fact that small business employment in Russia stagnated during the 1992 to 1999 period (OECD, 1997; GOSKOMSTAT, 2000).

Blanchard and Shleifer (2001) provide a complementary explanation of the difference between Russia and China. They argue that Russia's regional governments might not have been interested in economic growth because they had been captured by the old incumbent firms. Meanwhile, Russia's central government, which is more likely to be interested in growth, did not have the power to punish the anti-growth policies of the regions. In contrast, the central government in China is sufficiently strong to discipline the regions and the incumbent firms are weaker, so that the probability of capturing regional governments is reduced.

All of the above arguments underline the importance of initial conditions for the fiscal relationship between the region and its municipalities, in particular, the large size of the tax base that is responsive to the municipalities' efforts and the political and institutional stability of the country. Until these conditions are in place, fiscal independence of municipalities and the resulting incentives for policies conducive to local economic development are difficult to achieve.

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References

- Alexeev, Michael, Kurlyandskaya, Galina, 1998. 'Second tier' fiscal federalism: Budgetary relations between regional governments and municipalities. Department of Economics, Indiana University, Bloomington, IN. Unpublished manuscript.
- Baltagi, Badi H., 1995. *Econometric Analysis of Panel Data*. Wiley, Chichester, England.
- Blanchard, Olivier, Shleifer, Andrei, 2001. Federalism with and without Political Centralization. China versus Russia. IMF Staff Papers 48, 171–179. Special Issue.
- Ernst, Maurice, Alexeev, Michael, Marer, Paul, 1996. *Transforming the Core: Restructuring Industrial Enterprises in Russia and Central Europe*. Westview Press, Boulder, CO.
- Freinkman, Lev, Titov, Stepan, Treisman, Daniel, 1999. *Subnational Budgeting in Russia: Preempting a Potential Crisis*. The World Bank, Washington, DC.
- GOSKOMSTAT, 2000. *Maloe predprinimatel'stvo v Rossii* (Small Entrepreneurship in Russia). Goskomstat Rossii, Moscow, Russia.
- Greene, William H., 2000. *Econometric Analysis*, 4th edition. Prentice-Hall, Upper Saddle River, NJ.
- Ivanov, Vadim, Kolbasova, Anna B. (Eds.), 1992. *Rossiiskaia ekonomika v 1991 godu: tendentsii i perspektivy* (Russian Economy in 1991: Trends and Prospects). Institute for the Economy in Transition, Moscow, Russia.

- Jin, Hehui, Qian, Yingyi, Weingast, Barry R., 1999. Regional decentralization and fiscal incentives: Federalism, Chinese style. Stanford University, Stanford, CA. Working Paper, SWP-99-013.
- Kurlyandskaya, Galina, Nikolaenko, Elena, Golovanova, Natalia, 2002. Local government in the Russian Federation. In: Munteanu, Igor, Popa, Victor (Eds.), *Local Government and Public Service Reform Initiative: Developing New Rules in the Old Environment*. OSI/LGI, Budapest, Hungary, pp. 161–265. <http://lgi.osi.hu/publications/2001/84/Ch4-Russia.pdf>.
- Litwack, John M., 2002. Central control of regional budgets: Theory with applications to Russia. *Journal of Comparative Economics* 30 (1), 51–75.
- Litwack, John M., 1993. Coordination, incentives, and the ratchet effect. *RAND Journal of Economics* 24 (2), 271–285.
- Organisation for Economic Cooperation and Development, 1997. *OECD Economic Surveys: Russian Federation 1997*. OECD, Paris, France.
- Qian, Yingyi, Roland, Gerard, 1998. Federalism and the soft budget constraint. *American Economic Review* 88 (5), 1143–1162.
- Qian, Yingyi, Roland, Gerard, Weingast, Barry R., 1997. Federalism as a commitment to preserving market incentives. *Journal of Economic Perspectives* 11 (4), 83–92.
- Roland, Gérard, Sekkat, Khalid, 2000. Managerial career concerns, privatization and restructuring in transition economies. *European Economic Review* 44 (10), 1857–1872.
- Rossii-1993: ekonomicheskaya kon'iunktura (Russia-1993: Economic Situation). Vol. 1, Center for Economic Situation and Forecasting, Moscow.
- Shavell, Steven, 1979. Risk sharing and incentives in the principal and agent relationship. *The Bell Journal of Economics* 10 (1), 55–73.
- Shleifer, Andrei, 1997. Government in transition. *European Economic Review* 41 (3–5), 385–410.
- Treisman, Daniel, 1996. The politics of intergovernmental transfers in Post-Soviet Russia. *British Journal of Political Science* 26 (3), 299–335.
- Treisman, Daniel (2000). Decentralization, tax evasion, and the underground economy: A model with evidence from Russia. UCLA, Los Angeles, CA. Unpublished manuscript.
- Weitzman, Martin L., 1980. The ratchet principle and performance incentives. *Bell Journal of Economics* 11 (1), 302–308.
- Zhuravskaya, Ekaterina V., 2000. Incentives to provide local public goods: Fiscal federalism, Russian style. *Journal of Public Economics* 76 (3), 337–368.